DSOD Fault Activity Guidelines

for use in deterministic fault activity assessments

Active Seismic Sources (considered seismic sources for dam design or reevaluation)

Holocene Active Fault: is a fault on which surface or subsurface displacement has occurred within the Holocene epoch. Holocene activity is demonstrated by one or more lines of evidence including the following:

Holocene (last 10,000 years) stratigraphic displacement.
Geomorphic evidence of Holocene displacement or tectonism[1].
Geodetically measured tectonism or observations of fault creep.
Well-located zones of seismicity

Latest Pleistocene Active Fault: is a fault on which no evidence of Holocene displacement is known, but which has experienced surface or subsurface displacement within the last 35,000 years. Latest Pleistocene activity is demonstrated by one or more of the following lines of evidence:

Stratigraphic displacement to units 11,000 to 35,000 years.
Geomorphic evidence of Latest Pleistocene displacement or tectonism.

[1]tectonism refers to crustal deformations which are indicative of faulting

Conditionally Active Seismic Sources (treated as a seismic source for dam design or reevaluation because of incomplete or inconclusive evidence, with the understanding that additional investigation or analysis could change the designation)

Conditionally Active Fault: a fault which meets one of the following criteria.

A Quaternary active fault (one that has experienced surface or subsurface displacement within the last 1.6 million years) with a displacement history during the last 35,000 years that is not known with sufficient certainty to consider the fault an active or inactive seismic source.

A pre-Quaternary fault which can be reasonably shown to have attributes consistent with the current tectonic regime. *Example...* In the foothills of the Sierra Nevada geomorphic province Mesozoic faults are considered Conditionally Active Seismic Sources unless proven otherwise.

Inactive Seismic Sources (not considered for dam design or reevaluation)

Inactive Fault: a fault which has had no surface or subsurface displacement within the last 35,000 years. Inactivity is demonstrated by a confidently-located fault trace which is consistently overlain by unbroken geologic materials 35,000 years or older, or other observation indicating lack of displacement. Faults that have no suggestion of Quaternary activity are presumed to be inactive.

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